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## Chord Electronics DAVE DAC

by Alan Sircom

In this review, I'm going to take the unusual step of starting with the negatives first: Dear Chord Electronics, you called it DAVE? Really? Is there some kind of kid's TV thing going on here – “Today children, Timmy the transport and Dave the DAC meet up with Andy the amplifier to allow Lenny the loudspeaker to make some noise.” OK, so there's a backronym involved ('Digital to Analogue Veritas in Extremis'), which goes some way toward providing mitigating circumstances. Even so... DAVE the DAC: That's up there with Postman Pat and Captain Snort from Pippin Fort.

But really, that's it. That's about the only bad thing I get to say about the Chord DAVE DAC. Everything else is, quite simply, some kind of magnificent. In a way, it's so good that the review effectively channels the late science-fiction author Sir Arthur C. Clarke, because the DAVE lives up to his maxim that, “Any sufficiently advanced technology is indistinguishable from magic.”

Calling the DAVE a DAC is doing it a disservice, as it is more of a decoding computer in the truest sense. The relevant digital decoding and filtering algorithm is stored in memory until the choice of PCM or DSD datastream is chosen, at which point the DAVE virtually reboots itself with the right DAC options for the music preloaded into its large FPGA (Field Programmable Gate Array). Contrast this with the rest of the digital audio replay world and you are met with good devices that share the same silicon for PCM and DSD replay, or the better models that run entirely separate digital pathways for the two. The Chord way is uncontentiously the best for sound quality terms, as there is no digital transcoding, and no quiescent digital processing subsystems on the same processor board. OK, so those who like to switch instantaneously from PCM to DSD and back again may balk at several seconds of downtime while one DAC is expunged and replaced by another in the FPGA, but their impatience costs them dearly in the aural stakes.

This ability to store and deploy the right DAC for the task not only sets the DAVE apart from its rivals, it sets it apart from digital's history. This wouldn't have been possible even a few years ago, because the large LX75 variant of the Xilinx Spartan 6 FPGA used in the DAVE didn't exist, and nothing that went before had the capacity to cope with such a sizeable amount of code being written and overwritten. Put simply in Chord-

language, the latest FPGA has around 10x the capacity of the previous QBD76 flagship from the company.

If this were DAVE's sole 'plus', it would already set it above the competition, but the rewritable DAC is merely one part of the DAVE's portfolio of ground-breaking tech. There's also Rob Watts' innovative WTA interpolation filter, which uses 166 separate DSP cores and an unprecedented 164,000 taps. The flexibility of the architecture extends to the operation of the DAC. If you want to configure the DAVE to prioritise PCM over DSD or vice versa, engage different styles of filter, specify which inputs to use and in which order of priority, adjust phase, use the DAVE as a digital hub or simply a DAC, or use one of Chord's innovative Crossfeed DSP settings to drive headphones, all are possible and addressable using the menu system in the central 'eye' of the DAVE. You can also determine output level, adjust the display for complex or 'granny' modes, menu colour scheme... the full enchilada. What's more, far from giving the DAVE a clunky, overblown interface, four buttons and a central knob control the whole device and, with a series of multi-colour LEDs to denote the nature of the digital input received. The only minor niggle here is because of that flexibility of set-up, these five hard buttons are not marked; this is understandable because one button will do myriad different things depending on whether you are in set-up or play mode, but those who insist every button be labelled don't get their hands held.

The easiest way of thinking of the DAVE interface is to use the display, which is always divided into three sections. The uppermost two display digital input and file type on the left and volume level or line output on the right. The lower section displays information regarding the mode in which the DAVE is working; preamplifier, DAC, or headphone amp/DAC. The thing to note, both in the front panel display and the array of LEDs that surround that central display, is just how powerful the processing power of the DAVE can be. It supports PCM files to 32bit, 768kHz, DXD, and up to DSD256 (we need to place the term 'allegedly' after this; not that we suspect Chord of being incapable of living up to its specifications, but because the only thing recorded at 32/768 PCM at the moment is the sound of unicorns). While these astonishingly large bit depths and sampling frequencies are – for the moment at least – academic, it does suggest the



Chord DAVE's abilities at processing the kind of files you can buy or stream are state of the art.

As ever with Chord products, the build quality is off the charts. The elegant aluminium or black anodised finish is rich and deep, the product looks like it was constructed to withstand the rigours of deep space, and the control surfaces have a positive feel. It's also extremely well specified in terms of inputs and outputs; HDMI and FireWire (remember FireWire?) are missing, and this is not a streamer so don't expect an Ethernet connection, but it sports a ¼" TRS headphone jack, four BNC-based coaxial digital inputs, USB, two toslink connectors and an AES/EBU balanced input. Then there are the quartet of 'DX' digital connections also using BNC connectors that fit into a 'watch this space' line of reasoning.

The DAVE fires up within 20 seconds (that's how long it takes to load up the decoder of choice and then run checks and balances to confirm status, and general housekeeping), but sounds at its best when the player is warm to the touch. However, the performance difference between 'stone cold start' and 'warm to the touch' is minimal in comparison to other designs. Essentially, 20 seconds into turning the DAVE on for the first time, you are at about 90%-95% of what it can do, and the rest just piles in from there... fast!

But what can it do? Put simply, it does it all. This, perhaps more than any DAC, is digital done right. It has the same 'wow!' factor performance that sets the Mojo and Hugo apart from their respective competitors, but taken to a new level. If you are in the market for a DAC at this price and beyond ('beyond' extending up to about 10x the DAVE's price) here's how the demonstration goes: it is plugged in, you wait 20 seconds, listen for about 10 seconds more, and reach for the credit card. If you do this, have someone waiting with a camera or smartphone to record your facial expression during those 10 seconds, because you go from 'WTF' to 'OMG' and then 'LOL'.

Everything – literally everything – you can throw at the DAVE musically is returned as best as you have ever heard it. OK, it doesn't suffer musical fools gladly, and compressed recordings remain compressed, but even here the sheer amount of information the DAVE is extracting will make you reevaluate your music anew. Reviewers (unconsciously or otherwise) have a series of tick boxes they list when listening to a device: dynamics... tick, microdynamics... tick, vocal articulation... tick, detail... tick, and so on. Normally, these elements are rated on a scale and how they combine dictates both absolute performance and recommendation in terms of ▶



► 'fit' into a system and the tastes of a listener. Good bass and fast transients might, for example, put a device into a 'pacy, rhythmic' system, where excellent imagery, good detail, and midband transparency would put it in a 'traditional audiophile' setting. The DAVE is that rare beast; a device that performs equally well in all these aspects of performance, and by 'equally well' we mean it does an outstanding, class-leading job in all parameters.

This makes reviewing the DAVE both easy and incredibly difficult. Easy because the review just defaults to a series of superlatives; boring to read, but easy to create. Difficult because trying to categorise any aspect of performance

is merely pointing out the faults in other devices. While I'm fairly sure Chord would like that, when you are working with something as advanced as the DAVE it feels a little like *schadenfreude*. But the fact remains that the DAVE is the best DAC I can think of at this or any other price. Yes, I can see people listening to the DAVE and ultimately choosing another DAC because they prefer how its set of compromises fit into their tastes or their system, but I can't see someone dismissing it out of hand.

I guess if I have to pick one area where the DAVE shines it is in its sense of dynamic scale and shading. Not because the DAC accents this, but because it shows so clean a set of ►

*“What is so important about the Chord DAVE is that it represents a raising of the bar of what can be had from a digital device. It’s one of those rare products that throws down a gauntlet both sonically and technologically.”*

► heels to its rivals, this sheer energy coupled with outstanding subtlety makes the DAVE simply shine. Whether that’s a bangin’ bass line from a ZZ Top record or the full *sturm und drang* of the conclusion of Mahler’s Eighth Symphony, or even the delicate interplay of musicians in a smokin’ jazz recording from the late 1950s, the DAVE sets its flag in the ground in amongst the best DACs money can buy. You might get ‘different’, you might even get ‘equal’, but I don’t think you can get ‘better’, whatever the price. That’s how good DAVE is.

The headphone amplifier is similarly excellent, and extremely powerful and quiet. It doesn’t struggle with even the most difficult headphones and is extremely quiet with sensitive models. Crossfeed is an interesting concept for headphone users. Or perhaps more accurately, Crossfeed is an excellent concept for traditional stereo users adopting the headphone revolution. As the name suggests, Crossfeed introduces a small amount of ‘blend’ information (left channel information included in the right channel, and vice versa) to replicate live sound in the room, studio, or concert hall. Crossfeed has three settings, and you could almost consider these are made for ‘in ear’, ‘closed back’ and ‘open back’ designs in descending order of intensity. Curiously, although normally such DSP settings are best used ‘off’, I found this did give more of a sense of music being outside the head rather than thoroughly lateralised and in-head. While I’ve learned to enjoy that lateralised sound, it’s actually very refreshing to hear a soundstage that appears to sound like it’s coming from outside my own cranium from time to time. This might not be as exotic as the Smyth Realiser, but the Crossfeed concept is more than just a gimmick.

As I’ve said, there are rival products, some of which turn in a different sound, and some of those sounds you might prefer over the DAVE. And there are some digital converters that come so close to the DAVE’s performance that you’d struggle to hear the difference in some settings. But the DAVE will likely show its hand sooner or later. It may be in dealing

## TECHNICAL SPECIFICATIONS

**Type:** DAC, with built-in headphone amplifier

**Inputs:** USB B-style: 44 kHz to 768 kHz - DXD and

Quad DSD, 2x optical: 44kHz to 192kHz , 1 × AES:

44kHz to 192kHz , 4 × Coax: 44kHz to 384kHz,

2× BNC ‘DX’ inputs

**Outputs digital:** 2× ultra-high-speed coax 768kHz

dual-data mode for use with future-unannounced Chord Electronics products.

**Outputs analogue:** 2× RCA, 2× XLR, ¼” TRS headphone socket

**Dual-data mode available**

**Maximum output voltage:** 6 volts RMS

**THD and noise at 2.5 volts:** RMS 0.000015 %

**THD and noise at 2.5 volts:** 127dBa Awt (124dBa into 33 ohms)

**Dynamic range:** at -60 dBFS 1kHz -127 dBa A wt

(No measurable noise floor modulation, no a harmonic distortion)

(Analogue distortion characteristic: no distortion for small signals)

**Power requirements:** mains power 80 volts to 260 volts;

AC 20 watts

**Available:** in black or silver

**Dimensions:** (W×H×D): 34×6×15cm

**Weight:** 7kg

**Price:** £7,950

**Manufactured by:** Chord Electronics

**URL:** [www.chordelectronics.co.uk](http://www.chordelectronics.co.uk)

**Tel:** +44 (0)1622 721444

with a format, or outputting to a super insightful system or headphone, but the DAVE is a tough act to better all round.

Perhaps beyond all other aspects of performance, what is so important about the Chord DAVE is that it represents a raising of the bar of what can be had from a digital device. It’s one of those rare products that throws down the gauntlet, both sonically and technologically. Yes, you can do a lot with an off-the-shelf variation on a theme of the application board that is supplied to digital engineers by the chip companies, but that only goes so far. Chord Electronics’ DAVE is one of the few devices that challenges that concept head on. And for that, I can put up with the electromorphising name. The DAVE gets the strongest recommendation we can muster! +

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## Next issue

### AWARDS!

Audio is better than ever, and next month holds the proof. We trawl the audio waters in search of the freshest, finest hi-fi products that we have heard in the last 12 months. Only the best of the very best audio equipment is deserving of a *Hi-Fi+* Award. In every category from the finest cartridge to the biggest loudspeaker, we pick the winners and the runners up. Is the awesome Chord DAVE headphone amp/DAC really one of the best of it's kind? Find out next month...



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